REMARKS

Claims 1-20 were examined in the outstanding final office action mailed on 01/11/2007 (hereafter "First Final Office Action"). All claims were rejected.

By virtue of this paper, claims 1, 8 and 13 are sought to be amended and new claim 21 is sought to be added. The amendments and additions are believed not to introduce new matter and their entry is respectfully requested. The amendments and additions are made without prejudice or disclaimer. Reconsideration is requested further in view of the below remarks.

Examiner Interview

As noted above, a telephone interview was conducted with Examiners Kennedy and Knight on August 8, 2007. Only the Examiners and the undersigned representative are believed to be the participants.

The undersigned representative reviewed proposed amendments (at least substantially along the lines of the presented amendments) to claims 1 and claim 8 in relation to US Patent Number 5,809,490 issued to Guiver *et al* (hereafter 'Guiver'). The below noted comments were also discussed.

The applicant is believed to have met the burden of making of record the Substance of the Interview. The Examiner is respectfully requested to send a duly completed Interview Summary form PTOL 413 if one has not been sent already. See MPEP 713.04 for further clarification.

Claim Rejections - 35 U.S.C. § 102

Claims 1-6, 8-11, 13-20 were rejected under 35 U.S.C. 102(b) as being anticipated by US Patent Number 5,809,490 issued to Guiver. Without acquiescing to the Examiner's contentions, it is asserted that the presented claims overcome the rejection.

For example, currently amended claim 1 recites in relevant parts:

A method of reducing number of computations when modeling several systems using a neural network, wherein said neural network contains a plurality of neurons, wherein each system is modeled by starting with a corresponding plurality of initial weights for said plurality of neurons and performing ***computations iteratively*** to re-compute weights of at least one of said neurons ***until a pre-specified condition is obtained, wherein the weights of said neurons when said pre-specified condition is obtained represents final weights modeling the system***, said method comprising:

receiving a first data set characterizing the behavior of a first system, said first data set containing a first plurality of data elements;

modeling said first system based on said first data set using said neural network, wherein a first set of weights are generated by said modeling said first system, wherein ***said first set of weights corresponds to the set of final weights associated with said plurality of neurons modeling said first system***;

receiving a second data set characterizing the behavior of a second system sought to be modeled by said neural network, said second data set containing a second plurality of data elements;

determining whether said first plurality of data elements follow a similar pattern as said second plurality of data elements; and

modeling said second system based on said second data set using said neural network, ***wherein said first set of weights are used as weights for said plurality of neurons while modeling said second system*** if said first plurality of data elements follow a similar pattern as said second plurality of data elements.

(Currently Amended claim 1, ***Emphasis Added***)

Thus, in accordance with amended claim 1, weights of neurons may be iteratively re-computed until a pre-specified condition is obtained. The weights of the neurons when such condition is obtained, represents 'final weights' modeling the system.

In other words, when the pre-specified condition is obtained, the weights of the neurons are considered the 'final weights' of the system then being modeled.

An example of such a condition is when the neurons with associated set of final weights causes the neural network to provide output values within a desired error level (as claimed in new claim 21).

Further, currently amended claim 1 recites modeling a first system and also a second system. The 'final weights' of modeling the first system are used in modeling the second system. Dependent claim 18 further recites that the final weights are used as initial weights while modeling said second system.

Guiver does not disclose or reasonably suggest the use of final weights modeling a first system in modeling the second system using a neural network.

The Examiner improperly equates the weights of previous iterations used for succeeding iterations of Guiver to the claimed 'final weights'. In particular, it was stated that:

> ... (The examiner takes the position that the applicant's teaching of using ***final weights*** as the first set of weights is anticipated in Guiver et al. ***teaching the use of the weight of his winning neuron from the previous iteration*** as the value used to set surrounding neurons in a ***succeeding iteration*** in Column 7, Lines 35-39);
> (Last 5 lines on Page 4 of the First Final Office Action, ***Emphasis Added***)

With respect to the claimed "... computations iteratively to re-compute weights of at least one of said neurons until a pre-specified condition is obtained...", Guiver discloses:

> Next, the routine determines whether the change in the weight values is less than a predetermined threshold in step 198. If not, the routine further determines whether a predetermined maximum iteration limit has been reached in step 200. ***If the iteration threshold has not been reached, the routine loops back to step 188 to continue the training process. Alternatively, if the change in weight values is less than the determined threshold in step 198, or if the maximum iteration limit has been reached in step 200, the routine exits***.
> (Col. 9 lines 54-63, ***Emphasis Added***)

The claimed final weights are analogous to the weights when the routine of Guiver exits, as taught above. There is no disclosure or suggestion in Guiver that the weights at the time of exiting are used in modeling other input data using the neural network in Guiver.

Claim 1 is thus allowable over Guiver. Claims 2-7, 18 and 21 depend from claim 1 and are allowable at least for the reasons noted above with respect to claim 1.

Claim 18 is allowable independently in reciting, "wherein said first set of weights are used as ***initial weights*** for said plurality of neurons in said neural network while modeling said second system." (***Emphasis Added***)

In rejecting claim 18, it was stated that:

> ... (The applicant's claimed teaching of using the first set of weights if the first data set and second data set are similar, ***and using random values for the weights if***

> ***the first data set and second data set aren't similar*** is anticipated in the invention of Guiver et al. The examiner takes the position that this anticipation is found in Guiver et al. teaching the training of his SOM network on a particular data set x, in Column 7, Lines 49-54, where for each data set, the network's weight values are initialized to random values, and while the data remains the same, the network continue to optimize the weights and error value for that data.).
> (Line 12 of page 23 through line 3 of page 24 of the First Final Office Action, ***Emphasis Added***)

It is first clarified for record that claim 18 does not refer to random values for the weights (contrary to the emphasized language above).

Furthermore, the applicants do not find the teaching of the first set of weights (the final weights of modeling the first system as claimed in claim 1, from which claim 18 depends) being used as the <u>initial weights</u> ("... wherein each system is modeled by <u>**starting**</u> with a corresponding plurality of initial weights ..." in claim 1) for said plurality of neurons for the neurons while modeling the second system in the text of Guiver relied upon by the Examiner (reproduced conveniently below).

> Prior to using the Kohonen SOM clusterizer, the SOM needs to be trained. FIG. 6 shows the routine to train the Kohonen SOM of FIG. 5 in more detail. In FIG. 6, the input data x is loaded in step 182. Next, the weights of the SOM network is initialized in step 184. ***The initial weights of the SOM network may be chosen using a number of strategies. Preferably, the initial weights are selected using a random number generator.***
> (Column 7, lines 46-54 of Guiver, ***Emphasis Added***)

Thus there is no disclosure or specific suggestion in Guiver to use the final weights in modeling one system as initial weights of another system. Accordingly, claim 18 is allowable independent over Guiver.

Currently amended independent claim 8 is allowable over Guiver at least in reciting that, "... modeling said first system based on said first data set using said neural network such that said neural network generates output values with a corresponding desired degree of accuracy compared to said first set of expected output values in response to receiving said first plurality of data elements...".

In sharp contrast, the reference to 'neural networks' has a different purpose, based at least on the below disclosure:

> Turning now to the clusterizer of step 226, the ***clusterizer is preferably a neural network*** known by those skilled in the art as a Kohonen self organizing map (SOM), shown in more detail in FIG. 5. The Kohonen SOM is an unsupervised learning network ***which transforms a P dimensional input pattern to a Q dimensional discrete map in a topologically ordered fashion***. Typically, Q is a one or two dimensional discrete map. In the Kohonen SOM, input points that are close in the P dimension are mapped close together on the Q dimension lattice. Each lattice cell is represented by a neuron associated with a P dimensional adaptable weight vector. The match between each weight factor is computed with every input. The best matching weight factor and some of its topological neighbors are then adjusted to better match the input points. The Kohonen SOM offers the desirable property of topology preservation where nearby input patterns activate nearby output units on the map. Such networks have been used for generating semantic maps, graph partitioning and clustering where high dimensional, complex information is compressed into an ordered fashion by reducing the dimensionality of the information without loss of knowledge about interrelationship of data.
> (Line 64 Col. 6 through Line 18 Col. 7, ***Emphasis Added***).

Thus, the neural network of Guiver is believed to be directed to clustering of data.

At least for such a reason, currently amended claim 8 is allowable over the art of record. Currently amended independent claims 13 and 17 is also allowable for similar reasons.

Claims 9-12 and 19 depend from claim 8 and are allowable at least for the reasons noted above with respect to claim 8. Claim 18 depends from independent claim 17 and is thus allowable at least for the reasons noted above with respect to claim 18.

Conclusion

Thus, all the objections and rejections are believed to be overcome and the application is believed to be in condition for allowance. The Examiner is invited to telephone the undersigned representative at 707.356.4172 if it is believed that an interview might be useful for any reason.

Respectfully submitted,
/Narendra R Thappeta/
Signature

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